

AMENDMENTS TO THE SPECIFICATION

Page 1, please delete the paragraph beginning at line 4 and substitute therefor the following new paragraph:

BACKGROUND OF THE INVENTION

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a transport system, and particularly a suspended-type transport system, which has the capability of efficiently and safely transporting an object in a slope region as well as a horizontal region of a rail.

Page 1, please delete the paragraph beginning at line 9 and substitute therefor the following new paragraph:

BACKGROUND DESCRIPTION OF THE RELATED ART

A suspended-type transport system, e.g., a monorail transport system is widely utilized as a transport means between two locations spaced from each other by a short or middle distance (e.g., 5 to 20 km), and is comprised of a rail formed in a predetermined route, a vehicle carrying a drive wheel rotatable on the rail and a motor for driving the drive wheel, and an object such as a carriage connected to an end of a coupling member hanging from the vehicle. In this kind of transport system, since because the rail is supported by bridge piers formed at a required interval on the ground, there are advantages that the transportation route can be designed with a high degree of freedom, and a land area needed to construct the transport system can be reduced, as compared with the general transport system with a rail line directly put on the ground. On the other hand, when the transport system is constructed at sites with complex topographic features, it often has a lot of slope regions of the rail.

Page 1, delete the paragraph beginning at line 23 and substitute therefor the following new paragraph:

By the way, in the slope regions of the rail, there is a fear that a running posture of the object to be transported becomes unstable, or the smooth running cannot be provided. ~~Due to~~ Because of these problems, various kinds of countermeasures are proposed. In particular, when the object to be transported is a passenger carriage, the running performance in the slope regions is an important subject to be improved from the viewpoint of safely and comfortably transporting the passengers.

Pages 1 and 2, delete the paragraph beginning at line 30 and substitute therefor the following new paragraph:

For example, Japanese Patent Early Publication [kokai] No. 1-204819 discloses a track device for smoothly transporting an object. As shown in FIGS. 10A and 10B, this track device is formed with a drive wheel 100 that runs on an upper surface 1a of a rail 1, and an auxiliary wheel 120 elastically contacting a lower surface 1b of the rail 1, so that the rail is caught between the drive wheel and the auxiliary wheel in the up and down direction. ~~Since~~ Because an increase in contact pressure between the drive wheel and the rail provides an improved gripping force of the drive wheel on the rail, the object can be stably transported even in the slop regions of the rail.

Page 2, delete the paragraph beginning at line 9 and substitute therefor the following new paragraph:

In the above track device, ~~since~~ because both of the drive wheel and the auxiliary wheel contact the rail over the entire regions including the slop regions and horizontal regions of the rail, a high contact pressure between the drive wheel and the rail is always maintained when the vehicle is running. However, there is a problem that the contact pressure leads to an increase in energy cost needed to transport the object. In addition, when a large and high power motor 140 is mounted on the vehicle to provide the running of the vehicle under the high contact pressure, there is a fear that the energy cost further increases ~~due to~~ as a result of the total weight of the vehicle. Thus, there is still plenty of room for improvement in the conventional transport system from

the viewpoints of safely and comfortably transporting the object with energy conservation.

Pages 2 and 3, please delete the paragraph beginning at line 25 and substitute therefor the following paragraph:

That is, the transport system of the present invention ~~is characterized by having includes~~:

a main rail formed along a required route and having at least one slope region; an auxiliary rail formed under the main rail in the slope region of the main rail;
a vehicle coupled to an object to be transported, and carrying a drive wheel rotatable on an upper surface of the main rail and a drive unit for the drive wheel;
an auxiliary wheel held by the vehicle to be rotatable on the auxiliary rail without contacting the main rail; and

an elastic-force loading unit configured to apply an elastic force in a direction of pressing the auxiliary wheel against the auxiliary rail.

Page 3, please delete the paragraph beginning at line 6 and substitute therefor the following paragraph:

According to the present invention, ~~since because~~ the auxiliary wheel elastically contacts only the auxiliary rail formed in the slope region of the main rail, and the main rail and the auxiliary rail are caught between the drive wheel and the auxiliary wheel, a large contact pressure (gripping force) can be obtained between the drive wheel and the main rail. Thereby, it is possible to efficiently and smoothly move the vehicle upward and downward in the slope region of the rail without preventing slippage of the drive wheel. On the other hand, in a horizontal region of the main rail, ~~since because~~ the auxiliary wheel does not contact the rail, it is possible to obtain the running of the drive wheel on the main rail under a small friction resistance without excessively pressing the drive wheel against the main rail. That is, a high gripping force is obtained in the slope region of the main rail, and a moderate grip force is obtained in the

horizontal region of the main rail where the auxiliary rail is not formed. Consequently, the object can be efficiently transported with energy conservation.

Pages 4 and 5, please delete the paragraph beginning at line 19 and substitute therefor the following paragraph:

The transport system according to a specific preferred embodiment of the present invention is a suspended-type transport system, ~~which is characterized by~~ having:
a main rail formed along a required route and having at least one slope region;
an auxiliary rail formed under the main rail in the slope region of the main rail
a vehicle carrying a drive wheel rotatable on an upper surface of the main rail and a drive unit for the drive wheel;
a coupling unit connected at its one end to the vehicle and at the other end to an object to be transported, and
an auxiliary wheel held by the coupling means to be rotatable on the auxiliary rail without contacting the main rail; and
an elastic-force loading unit configured to apply an elastic force in a direction of pressing the auxiliary wheel against the auxiliary rail;

wherein a distance between the drive wheel and the auxiliary wheel is determined to be larger than a thickness of the main rail, and smaller than a total thickness of the main rail and the auxiliary rail, and the distance between the drive wheel and the auxiliary wheel is extended against the elastic force of the elastic-force loading unit by the main rail and the auxiliary rail in the slope region to increase a contact pressure of the drive wheel on the main rail.

Pages 5 and 6, please delete the paragraph beginning at line 29 and substitute therefor the following paragraph:

~~BEST MODE FOR CARRYING OUT THE INVENTION~~ DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT

Referring to the attached drawings, a transport system of the present invention

is explained in detail according to preferred embodiments.

Page 7, please delete the paragraph beginning at line 21 and substitute therefor the following paragraph:

FIGS. 2A to 2C shows that the vehicle 2 is running on the main rail 1 in the horizontal region. Since the drive wheels 11 are pressed against the main rail due to the total weight of the vehicle 2 and the carriage 3, a moderate friction resistance (gripping force) is obtained between the drive wheels 11 and the main rail 1, so that the drive wheels 11 can smoothly run on the main rail 1 in the horizontal region B without slippage. At this time, since because the auxiliary rail 4 is not formed in the horizontal region, the auxiliary wheels 20 do not contact any rail, as shown in FIGS. 2A and 2C.